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EXAMINER

LEE, HWA S

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FREDERICK M. DISCENZO

Appeal 2007-2687
Application 09/625,094¹
Technology Center 2800

Decided: January 17, 2008

Before KENNETH W. HAIRSTON, SCOTT R. BOALICK, and JOHN A. JEFFERY, *Administrative Patent Judges*.

BOALICK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the final rejection of claims 1-21, 24-27, and 37-43, all the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

¹ Application filed July 25, 2000. The real party in interest is Reliance Electric Technologies, LLC.

STATEMENT OF THE CASE

Appellant's invention relates to a system for monitoring bearing wear that uses an optical fiber embedded in the bearing. (Spec. 8-9.)

Claim 1 is exemplary:

1. A system for determining at least one condition of a bearing, comprising:

at least one optical fiber embedded in a bearing, the at least one optical fiber being adapted to transmit light from a light source; and

an interferometric system operatively coupled to the optical fiber and a processor;

wherein the interferometric system provides the processor with information relating to at least one condition of the bearing, and the processor determines a state of the at least one condition of the bearing based on the information.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Thomas	US 4,460,893	Jul. 17, 1984
Kersey	US 5,361,130	Nov. 1, 1994
Ide	US 5,382,097	Jan. 17, 1995
Dunphy	US 5,399,854	Mar. 21, 1995
Lee	US 5,473,428	Dec. 5, 1995

Claims 1-12, 14-21, and 24-27 stand rejected under 35 U.S.C. § 103(a) as being obvious over Dunphy, Kersey, and Thomas.

Claims 13, 27, and 37-43 stand rejected under 35 U.S.C. § 103(a) as being obvious over Dunphy, Kersey, Thomas, and Ide.

Rather than repeat the arguments of Appellant or the Examiner, we make reference to the Briefs and the Answer for their respective details. Only those arguments actually made by Appellant have been considered in this decision. Arguments that Appellant did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).²

ISSUE

The issue is whether Appellant has shown that the Examiner erred in rejecting the claims under 35 U.S.C. § 103(a).

PRINCIPLES OF LAW

All timely filed evidence and properly presented arguments are considered by the Board in resolving an obviousness issue on appeal. *See In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984).

² Except as will be noted in this opinion, Appellant has not presented any substantive arguments directed separately to the patentability of the dependent claims or related claims in each group. In the absence of a separate argument with respect to those claims, they stand or fall with the representative independent claim. *See* 37 C.F.R. § 41.37(c)(1)(vii).

In the examination of a patent application, the Examiner bears the initial burden of showing a *prima facie* case of unpatentability. *Id.* at 1472. When that burden is met, the burden then shifts to the applicant to rebut. *Id.*; *see also In re Harris*, 409 F.3d 1339, 1343-44 (Fed. Cir. 2005) (finding rebuttal evidence unpersuasive). If the applicant produces rebuttal evidence of adequate weight, the *prima facie* case of unpatentability is dissipated. *In re Piasecki*, 745 F.2d at 1472. Thereafter, patentability is determined in view of the entire record. *Id.* However, on appeal to the Board it is an appellant's burden to establish that the Examiner did not sustain the necessary burden and to show that the Examiner erred. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [for obviousness] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007).

In *KSR*, the Supreme Court reaffirmed that "[t]he combination of familiar elements according to known methods is likely to be obvious when

it does no more than yield predictable results." *Id.* at 1739. The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 1740.

The Court explained that:

[o]ften, it will be necessary . . . to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

Id. at 1740-41. The Court noted that "[t]o facilitate review, this analysis should be made explicit." *Id.* at 1741 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained

by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). However, "the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* The Court cautioned that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." *Id.* at 1742.

"Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.* at 1742. The Court also noted that "[c]ommon sense teaches . . . that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. "A person of ordinary skill is also a person of ordinary creativity, not an automaton." *Id.*

The level of ordinary skill in the art may be evidenced by the prior art references. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) ("Although the Board did not make a specific finding on skill level, it did conclude that the level of ordinary skill in the art . . . was best determined by appeal to the references of record We do not believe that the Board clearly erred in adopting this approach."); *see also In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978) ("the PTO usually must evaluate both the scope and

content of the prior art and the level of ordinary skill solely on the cold words of the literature").

ANALYSIS

Appellant contends that the Examiner erred in rejecting claims 1-21, 24-27, and 37-43. Reviewing the documents of record and the findings of facts cited above, we do not agree that the Examiner erred in rejecting claims 1-15, 24-27, and 37-43. In particular, we find that the Appellant has not shown that the Examiner failed to make a prima facie showing of obviousness with respect to these claims. Appellant failed to meet the burden of overcoming that prima facie showing. However, we agree with the Appellant that the Examiner erred in rejecting claims 16-21 as being obvious over Dunphy, Kersey, and Thomas.

Regarding claim 1, Appellant argues that neither Dunphy, Kersey, nor Thomas teaches or suggests an optical fiber embedded in a bearing. (App. Br. 5-8; Reply Br. 2-4.) Further, Appellant argues that neither Dunphy, Kersey, nor Thomas provides motivation to embed an optical fiber in a bearing. (App. Br. 5-8; Reply Br. 2-4.) Appellant also argues that even if there were motivation to combine the references, there would be no reasonable expectation of success. (Reply Br. 3-4.) We do not agree.

As the Examiner correctly found, Dunphy teaches an optical interferometric temperature sensor that includes an optical fiber (Ans. 3, 7-9; Dunphy Abstract; col. 3, l. 60 to col. 4, l. 21; col. 5, ll. 36-47; col. 9, ll. 31-33; and Fig. 1). The Examiner also correctly found that Thomas teaches a

thermocouple 18 embedded in a bearing 10 to monitor the temperature of a bearing (Ans. 4; Thomas, col. 3, ll. 30-33; Fig. 2). Furthermore, Lee, which was cited by the Examiner to show knowledge available to a person of ordinary skill in the art, teaches that an optical interferometric temperature sensor can be used to replace a thermocouple in order to measure temperature and that this replacement solves many problems of the prior art. (Ans. 7; Lee col. 1, ll. 24-35.) We agree with the Examiner that, with this knowledge, it would have been obvious to a person of ordinary skill in the art to replace the thermocouple of Thomas with the optical interferometric temperature sensor of Dunphy in order to measure the temperature of the bearing. (Ans. 4-5, 7-9.)

Although Lee states that the implementation of conventional interferometric temperature sensors is not easy and the practical uses are limited (Lee, col. 2, ll. 23-28), we do not find this to be a teaching away or a teaching that there is no reasonable expectation of success in replacing a thermocouple with an optical interferometric temperature sensor. There is no evidence that replacing a thermocouple with an optical interferometric temperature sensor was "uniquely challenging or difficult for one of ordinary skill in the art" or "represented an unobvious step over the prior art."

Leapfrog Enters., Inc. v. Fisher-Price, Inc., 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 127 S. Ct. at 1740-41). Indeed, an object of Lee is "to provide an interferometric temperature sensing system and process that can be easily implemented." (Lee, col. 2, ll. 49-51.)

Accordingly, we conclude that the Examiner did not err in rejecting claim 1 under 35 U.S.C. § 103(a). Claims 2-12, 14-15, and 24-27 were not argued separately, and fall together with claim 1.

However, with respect to claim 16, we agree with the Appellant that neither Dunphy, Kersey, nor Thomas teaches or suggests that the second end of the optical fiber is flush with a contacting surface of the bearing, as claimed. (App. Br. 8; Reply Br. 4-5.) The Examiner found that Thomas teaches "that the sensor should be place [sic] as close as possible to the load bearing point, therefore one of ordinary skill in the art would have been motivated to place the sensor flush with the contacting surface of the bearing . . . in order to obtain the most accurate measurement of the temperature." (Ans. 5-6.) We do not agree with this finding.

Although Thomas teaches that a thermocouple 18 to measure temperature is mounted "in close proximity to the maximum load-bearing point" of the bearing 10 (col. 3, ll. 30-33), Thomas does not teach or suggest mounting the thermocouple *flush* with a contacting surface of the bearing. Figure 2 of Thomas shows a space between the thermocouple 18 and the contacting surface of the bearing 10. Thus, the thermocouple 18 is shown in close proximity to, but not flush with, the contacting surface of the bearing 10. We find no reason in Thomas to further modify the position of the thermocouple 18 from that shown in Figure 2 so that the thermocouple 18 is flush with a contacting surface of the bearing 10. Further, we find no teaching or suggestion to mount a temperature sensor flush with a contacting surface of the bearing in any of the other applied references. In addition,

there is no evidence before us to show that mounting a temperature sensor flush with a contacting surface of a bearing is a predictable variation of the prior art. Nor is there evidence before us that mounting a temperature sensor flush with a contacting surface of a bearing would be common sense or a creative step that a person of ordinary skill in the art would employ.

Therefore, we conclude that the Examiner erred in rejecting claim 16. Claims 17-21 depend from claim 16, and we find that the Examiner erred in rejecting claims 17-21 for the same reasons discussed with respect to claim 16.

No separate arguments in accordance with our rules have been presented for claims 13, 27, and 37-43. (App. Br. 8-9; Reply Br. 5.) Claim 13 depends from claim 1 and claim 27 depends from claim 24. Independent claim 37 was argued on the same grounds as independent claim 1. (App. Br. 8-9; Reply Br. 5.) Accordingly, we conclude that the Examiner did not err in rejecting claims 13, 27, and 37-43 under 35 U.S.C. § 103(a) for the same reasons as discussed with respect to claims 1 and 24.

CONCLUSION OF LAW

Based on the findings of facts and analysis above, we conclude that:

- (1) The Examiner did not err in rejecting claims 1-15, 24-27, and 37-43 for obviousness under 35 U.S.C. § 103.
- (2) The Examiner erred in rejecting claims 16-21 for obviousness under 35 U.S.C. § 103.

DECISION

The rejection of claims 1-15, 24-27, and 37-43 for obviousness under 35 U.S.C. § 103 is affirmed.

The rejection of claim 16-21 for obviousness under 35 U.S.C. § 103 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

tdl

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Appeal 2007-2687
Application 09/625,094